METHOD AND APPARATUS FOR OUTPUT RATE CONTROL USING TIME-SLICED QUEUES WITH SIGNALING MECHANISM

ABSTRACT OF THE DISCLOSURE

A new time-sliced queue and signaling mechanism for implementing output rate control is described. The novel queue and the signaling mechanism are suitable for applications in which the output rate of elements of a large number of individual flows must be controlled independently. The method and apparatus including time-sliced output queues, examining the egress time of the elements of the flows, placing each element in one of the time slices of a time-sliced queue based on the egress time of the element, later removing each element from the queue at the appropriate egress time, sending out the element, and signaling the controlling process to place the next element for that flow in the time-sliced queue. If the egress times of two or more elements from different flows in the system fall within the same time slice in the queue, these elements are entered in the same time slice as a linked list of elements. A new element from each flow is placed in the time-sliced queue only after the controlling process is notified that the last element from the same flow has been removed from the time-sliced queue.